

Technical Report 791

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Factors Influencing Combat Stress Reactions and Post-Traumatic Stress Disorder: A Literature Review

Suellen F. Weaver and Nora Kinzer Stewart
Army Research Institute

Leadership and Management Technical Area
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U. S. Army

Research Institute for the Behavioral and Social Sciences

April 1988

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Factors Influencing Combat Stress Reactions and Post-Traumatic Stress Disorder: A Literature Review

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FOREWORD

Military unit cohesion is an ongoing and important concern of the United States Army. A critical but somewhat forgotten element affecting cohesion is stress, specifically combat stress reactions (CSR) and post-traumatic stress disorder (PTSD). Knowledge of the causes and effects of stress will help us control its negative effects, especially its effect on cohesion.

As a first approach to understanding the relationship of stress to cohesion, this technical report summarizes past research results and offers research comparisons with suggestions for future study. This review should provide background information on which to build future study, provide confirmed results that can be incorporated in current cohesion research, and point out specific problem areas that should be addressed.



EDGAR M. JOHNSON
Technical Director

FACTORS INFLUENCING COMBAT STRESS REACTIONS AND POST-TRAUMATIC STRESS DISORDERS: A LITERATURE REVIEW

EXECUTIVE SUMMARY

Requirement:

Research on the factors thought to cause stress reactions during and after battle experience was conducted in conjunction with the "South Atlantic Conflict of 1982: A Case Study in Military Cohesion" (Army Research Institute Research Report 1469, Stewart, 1988). In reviewing the literature on cohesion, the authors found that sound studies dealing with the topic of stress and its relationship to cohesion within troops were noticeably lacking. Further research led to the conclusion that the stress literature had many methodological shortcomings and that it addressed only peripherally the problem of the relationship of stress to cohesion.

This report presents a review of the findings of many studies on stress to provide the reader with a summary of what has been done and, more important, with some areas needing research. The results are combined into several categories of causal factors related to stress reactions, including psychological factors during the war, physical factors of the war, demographic factors, and post-war adjustment factors.

Procedure:

Studies were identified via several computer data bases and bibliographies supplied by the Veterans Administration Vietnam Outreach Office. Review articles were organized by topic area, and their findings were compared within these organized groups. Overall conclusions could then be drawn regarding the factors contributing to stress. Conflicting results led to recommendations for future study.

Findings:

The results of this review showed that there are many areas in which the data on stress reactions are not conclusive. Most factors thought to cause stress reactions are not supported as such by the literature. Further, many methodological problems make it impossible to draw any definitive

answers regarding the relationship between stress reactions and their causes.

Utilization of Findings:

Recommendations for future research are made and include instructions for researchers interested in stress problems. The study recommendations also suggest ideas for military planners interested in increasing training effectiveness and soldier adaptability.

FACTORS INFLUENCING COMBAT STRESS REACTIONS AND POST-TRAUMATIC STRESS DISORDER: A LITERATURE REVIEW

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FACTORS INFLUENCING COMBAT STRESS REACTIONS AND POST-TRAUMATIC STRESS DISORDER: A LITERATURE REVIEW

Introduction

Post-traumatic stress disorder (PTSD) is currently a highly visible research topic, especially due to the increased recognition afforded the veterans of Vietnam. The American Psychiatric Association's Diagnostic and Statistical Manual (DSM-III) defines PTSD as "the development of characteristic symptoms following a psychologically traumatic event that is usually outside the range of human experience." Silverman (1986) stated that PTSD is a psychiatric syndrome that occurs in some individuals after a stressful experience or trauma. Severe stress usually contains some harm, threat or challenge to the individual. The individual must deal with the stressor in order to prevent the loss of his/her well-being (Silverman, 1986).

PTSD and combat stress reactions, though very similar in symptomatology, are separate and distinct syndromes. Combat stress reaction (CSR) occurs when the soldier is in a combat situation. While both PTSD and CSR result from combat experience, CSR has immediate onset and PTSD is delayed in onset.

Historically, combat stress has many different labels. Probably people have always suffered from this disorder, but the disorder was not conceptualized formally until the 19th century (Silverman, 1986). Ellis (1984) reported findings related to war neuroses as early as the Battle of Marathon between the Greeks and the Persians in 490 B.C. During the 17th century, European troops experienced many cases of "nostalgia," characterized by melancholy, insomnia, weakness, loss of appetite, anxiety, cardiac palpitations, stupor, and fever (Ellis, 1984). The American Civil War of 1861-1865 had the most significant psychiatric casualties of the later 19th century, with 5,213 diagnosed cases of "nostalgia" in the white Northern troops during the first year of war (Ellis, 1984).

Shortly after the American Civil War, the functional aspect of the disorder was recognized, and Oppenheim and Thompson coined the term "traumatic neuroses" (Ellis, 1984). Finally, in 1885, H. Page described "neurasthenia following trauma" (Ellis, 1984). A biological and

neurological perspective of the disorder persisted until Freud identified several underlying psychological factors. Freud's students later used the term "shell-shock" to describe the phenomenon during World War I (Ellis, 1984). As the connection between stress and psychophysiological functioning became of interest, psychiatrists during World War II diagnosed soldiers with "battle stress" and "combat fatigue" (Ellis, 1984).

Although history is replete with anecdotal incidence of battlefield breakdown, the Vietnam war has provided the impetus for extensive, albeit methodologically imprecise, studies of PTSD. Tiffany (1967) stated that the rate of neuropsychiatric illness during Vietnam was lower than in any other conflicts. He attributed the lower rate of neuropsychiatric illness to the new one-year rotation policy, less combat exhaustion, better morale, better training of troops and sufficient mental hygiene personnel with proper psychiatric policies. Although neuropsychiatric casualty rates were lower during the Vietnam war, VanPutten and Yager (1984) now estimate that more than 500,000 Vietnam veterans are in need of treatment for emotional disturbances.

PTSD is a relatively common diagnosis among war veterans. Yet, it is difficult to estimate the prevalence of PTSD due to its delayed onset. Factors important to the onset of PTSD range from individual psychological to group or sociological and the physical conditions of combat. Experimenters attribute causal roles in the onset of PTSD to many factors, such as the intensity of combat, personality factors and physical conditions of the war. Researchers attempt to measure these factors in order to predict and alleviate the onset of PTSD.

Although there is a body of literature focusing on civilians, the purpose of this paper is to review the possible causal factors relevant to war and the military. This paper presents recent research findings on PTSD. Although the studies reviewed have severe methodological problems, they do present many possible causal factors for PTSD. Stewart and Weaver (1987) analyze these problems in depth in another paper and provide a few guidelines for future research, including the need for better and more extensive subject groups, the replication of past research for the support of their findings, and the use of extensive statistical analysis to determine cause and effect relationships among variables. Because of faulty research and lack of conclusive evidence in support of most of the

variables investigated, more research is needed.

This article is an overview of current research findings pertaining to combat stress and PTSD. Individual factors will be discussed in four general categories: psychological factors during the war, physical factors of the war, demographic factors of the soldiers, and post-war adjustment factors. Each section begins with a summary and evaluation of the relevant literature on the topic and concludes with an assessment of future research needs in the area. The relevant research includes studies on the US, British and Israeli Armies.

Method

Ninety-one studies dealing with PTSD or CSR were reviewed. Studies were chosen through literature searches via several computer data bases (MEDLINE, DROLS, Aerospace Data Base, PTS Aerospace Data Base, PSYCHINFO, NTIS, and newspaper, magazine, and book indexes). Various bibliographies from the Veterans Administration Vietnam Outreach Office were also used. Requirements for inclusion were that the study dealt with possible causal factors of PTSD or CSR and that it was fairly recent (1970+). The studies chosen included review articles and original research. While the majority of the studies were conducted on United States soldiers, Israel and Britain are also represented. Most studies conducted prior to 1970 were considered inappropriate due to the later influence and change of the stress literature caused by the Vietnam War.

Psychological Factors During the War

Psychological factors thought to contribute to the onset of stress reactions, include: anger, anxiety, confidence in commanders, confidence in weapons, early childhood and preexisting personality, experience of adverse life events, fear, grief, cohesion, social support, estrangement, guilt, history of impulsiveness, meanings of combat, self-concept, and sense of helplessness.

Anger/ Hostility/ Aggression

Anger and rage stemming from the combat situation contribute to greater instances of PTSD (Dewane, 1984; Jelinek & Williams, 1984). Hostility and aggression play important roles in the onset of battle stress reactions (Bourne, Coli, & Datel, 1968; Weil, 1985; Yager, 1984; Brende, 1983). Participation in aggressive acts during battle led to more emotional problems, especially among

blacks. Hostility and external aggression (aggression directed outward toward others) contribute consistently to PTSD, but there is little research on the subject of anger and its relationship to PTSD. Thus, further replication of the studies is needed to compensate for the small number of studies on this topic.

Anxiety/ Stress

Stress and anxiety contribute to CSR and PTSD, although the extent of such contribution is unclear (Dasberg, 1975; Donnelly, 1982; Ingraham & Manning, 1980; Cohen & Hoberman, 1983; Bey, 1972; Bey & Zecchinelli, 1974). While researchers generally agree that stress contributes to the onset of CSR and PTSD, there is disagreement on the extent of its role. Some researchers concluded that stress is one factor among many which lead to stress reactions (Dasberg, 1975; Cohen & Hoberman, 1983; Bey, 1972; Bey & Zecchinelli, 1974). Others (Ingraham & Manning, 1980) found that stress is the single most influential factor in the onset of stress disorders since anyone can break down physically and emotionally if exposed to enough stress.

However, Saigh (1984) found that stress levels decreased when the stressful event was reduced or resolved. This finding contradicts the premise of the previously mentioned articles that stress will lead to PTSD. If stress does indeed decrease after the trauma, then stress would be an unlikely contributing factor to PTSD, since PTSD is, by its own nature, delayed. We need to focus on stress as a potential causal variable in order to resolve this contradiction.

Confidence in Commanders/ Leadership

Leadership and confidence in commanders are associated with a lower rate of psychiatric casualties. Studies (Gal, 1986; Noy, Nardi, & Solomon, 1986; Steiner & Neumann, 1978) indicate that an absence of leadership, or lack of confidence in leaders, leads to increased numbers of psychiatric casualties and poorer organizational climate. Thus, research generally supports confidence in leadership as a preventative factor for stress reactions although the number of studies dealing with leadership and stress reactions is less than prolific.

Confidence in Weapons

Gal (1986) proposed confidence in one's weapons as one

of eight factors found to influence company morale and cohesion. Soldiers more confident with their weapons had higher levels of unit and personal morale. He postulated that increased morale leads to fewer incidences of stress reactions. Since it is generally not sound to accept the results of only one study as law, researchers need to investigate further to determine the relationship between confidence in weapons and stress reactions.

Early Childhood/ Parental Neglect or Abuse/ Preexisting Personality/ Coping Style

Early childhood experiences, including parental neglect, arrests and school history, was found to contribute to violent acts in combat and to the onset of PTSD (Sudak, Martin, Corradi, & Gold, 1984; Yager, 1975). There is a decided controversy regarding the effect of early childhood experiences and preexisting personality (personality present prior to entering the military) on PTSD. Some researchers proposed that the meaning given to the combat experience depended on the preexisting personality of the individual (Hendin, Pollinger-Haas, Singer, Gold, & Trigos, 1983). Preexisting personality provides an individual with a coping style and creates a predisposition to neuroses or a neurotic coping style in some people (Andrews, Tennant, Hewson, & Valliant, 1978; Hendin, Pollinger-Haas, Singer, Gold, & Trigos, 1983; Lund, Foy, Sipprelle, & Strachan, 1984; Smith, 1985; Weil, 1985; Helzer, 1984; Davidson, Schwartz, Storck, Krishnan, & Hammett, 1985). Other authors questioned the role of preexisting personality and found that preexisting personality has no relationship to the onset of PTSD (Gal, 1986; Glover, 1984; Cavenar & Nash, 1976; Hocking, 1970; Ingraham & Manning, 1980; Silverman, 1986).

Clearly there is evidence for an effect of preexisting personality on the onset of PTSD. However, several questions remain unanswered. We do not know if preexisting personality has a causal role in the onset of PTSD or if it is simply a predisposing factor that will cause breakdown earlier and in response to less stress than with the average person. We do not know the extent of the influence of preexisting personality. If evidence becomes available that proves personality has a direct causal role in the onset of PTSD, how will the military branches screen for it? Is it possible to screen out those people with these predispositions who serve in the military? How many of the existing veterans with PTSD had some sort of predisposing

neuroses? How do we know that the personality we call "preexisting" did not develop as a result of battlefield conditions?

We cannot make any definitive conclusions regarding the role of existing personality factors without answering these important questions. Research needs to focus on samples with $n > 100$ to promote better generalization. Replication of results will help to support the current findings. The use of control subjects (those from within combat situations without any known PTSD symptoms) will determine if the factors considered are present only in PTSD patients or in the population as a whole. Researchers must continue their efforts, using better research methods such as matched experimental groups, to determine the relationship and its extent that the family and past childhood experiences contribute to PTSD.

Experience of Adverse Life Events in Adulthood

Measures of individual stress fluctuate with the number and nature of adverse events experienced throughout the individual's lifetime (Andrews, Tennant, Hewson, & Vaillant, 1978; Brende, 1983). Adverse events are precipitating factors to the onset of PTSD, as indicated by the American Psychological Association's (APA) definition of PTSD ("the development of characteristic symptoms following a psychologically traumatic event that is usually outside the range of human experience"). Researchers can test this assumption by searching for ways to measure the amount of trauma necessary for PTSD to occur and how this will interact with other relevant personal and individual factors.

Fear/Threat to Physical Existence

Fear of losing one's life or of experiencing bodily harm is an important factor in the onset of PTSD and especially CSR (Donnelly, 1982; Hendin, 1984; Hendin, Pollinger-Haas, Singer, Houghton, Schwartz, & Wallen, 1984; Weil, 1985; Shatan, 1982; Kolb, 1983; Gal, 1986; Glover, 1984; Ingraham & Manning, 1980). The experience of severe psychic trauma under terrifying and tiring conditions produces certain reaction behaviors. These reactions, such as passivity, freezing behavior, withdrawal, impaired communication and regression, provide the basis for the onset of a stress reaction. Fear or threat of dying increases the incidence of these symptoms in the individual.

There seems to be overall agreement on the role that fear or threat play in PTSD. Yet, several questions remain unanswered. How much fear is necessary to produce a stress reaction? Can this fear be measured? Who is more susceptible to fear--are there individual factors involved? We need more precise research to understand the role of fear in stress reactions.

Grief/ Loss of Comrades

The loss of a comrade and the resulting grief is also a precipitating factor in the onset of PTSD and CSR (Dasberg, 1975; Hocking, 1970; Dewane, 1984). Grief, and the prevalent consequence of survivor guilt (see "Guilt for Surviving or Killing"), can lead to feelings of helplessness and mourning. A soldier not only might mourn the loss of his "buddy," but also feels remorse (guilt of the survivor) for not being killed instead of his friend. While research shows that grief plays a role in PTSD, we still do not know the extent of that role. Since few studies of PTSD deal with grief specifically, we cannot assess the actual incidence of grief reactions. Thus, further research along these lines is needed.

Group Cohesiveness/ Morale/ Esprit/ Motivation

Military researchers evince an understandable interest in the relationship between cohesion, morale, and PTSD. Specifically, military researchers seek to find a way to promote cohesion and because they believe that increased cohesion will decrease the occurrences of stress reactions. Most research has shows that strong group cohesion is a factor in the reduction of psychiatric casualties (Bourne, 1970; Price, 1984; Shaw, 1983; Gal, 1986; Gal, 1983; Gal, 1986; Solomon, Noy, & Bar-On, 1986; Noy, Nardi, & Solomon, 1986; Tiffany, 1967; Yager, 1975; Milgram & Hobfall, 1986; Steiner & Neumann, 1978).

Gal (1986) states that, during wartime, group cohesiveness is a "primary and powerful source of personal and group morale." His research indicates that relationship variables are important in predicting the overall climate of the organization. This conclusion is used to promote cohesion among troops, even though it is unclear exactly how "cohesion" and "unit climate" are related.

Research findings agree that cohesion is important to efforts to decrease the rates of psychiatric casualties, both during and after war. Morale of the group and measures of cohesion influence rates of psychiatric casualties.

Higher morale will lessen the number of mental breakdowns within military units. Current research supports the theory that higher levels of morale promotes decreased rates of combat stress reactions. The structure of social relationships within the primary unit, including morale, cohesion and mutual responsibility, are the dominant motivating factors in combat behavior (Gal, 1983). Most evidence points to the importance of morale in lowering psychiatric casualty rates. Thus, military leaders and policy planners need to search for ways to promote morale and cohesion in units and troops. The armed forces must emphasize training and leadership in order to create and sustain morale and cohesion among troops in stressful circumstances. Further evidence of the psychiatric casualties related to the lack of group cohesiveness is the rotation schedule (as discussed under "Physical Factors of the War") and the resulting estrangement (as mentioned in the following section).

Social Support

Social support is closely linked to cohesion, since social support is often the outcome of a highly cohesive group. Social support has been investigated as a buffering variable on stress and as having a direct effect all its own. Some authors have found that social support has a direct effect on stress (Solomon, Mikulincer, & Hobfall, 1986). Other researchers found varying results depending upon the variables being measured or assessed (Cohen & Hoberman, 1983; Hobfall, 1985; Cohen & Wills, 1985). Still other scientists view a reduction in social support as occurring gradually and lessening immediately following return from combat (Keane, Scott, Chavoya, Lamparski, & Fairbank, 1985). This view thus indicates that PTSD has no delay, but becomes more acute with time until it is recognized as the full-blown syndrome.

There are significant theoretical and methodological problems in this research (Stewart & Weaver, 1987). Wilcox and Vernberg (1985) pointed out that there are many different definitions of social support which is not a unitary construct. Empirical literature does indicate that objective and perceived characteristics of supportive relationships exert influence on health and well-being. However, we do not know how these variables influence individual physical and mental functioning. Therefore, we need to research the relationship between well-being and social support more thoroughly.

Estrangement/Newcomer to a Clique/Interpersonal Adjustment

Problems in interpersonal adjustment (adjusting within a group) have also been studied in relation to CSR and PTSD. Researchers have found that a significant factor in the psychiatric problems of veterans was the isolation and estrangement from their homes, family, friends, and combat units they felt during and after their combat experiences (Dewane, 1984; Figley, 1978; Brende, 1983; Bey, 1972). Due to a policy of one-year rotation (individual rather than group replacement), individuals joined an already established unit in Vietnam. Abandonment and helplessness were significant factors in the onset of PTSD. A loss of ego supports in the form of leadership and group identification was a major contributor to stress reactions. While these few studies agree that estrangement (being outside a group or not included in the group) increases psychiatric casualties, we need more research to explicate relationships between this factor and variables such as the rotation schedule, leadership, and cohesion.

Guilt for Surviving or Killing

Survival guilt, and guilt as the result of killing other humans, contributes to mental breakdown during combat and PTSD (Dasberg, 1975; Hendin, Pollinger-Haas, Singer, Gold, & Trigos, 1983; Thienes-Hontos, Watson, & Kucala, 1982; Dewane, 1984; Glover, 1984; Laufer, Brett, & Gallops, 1985; Smith, 1982; Brende, 1983; Jelinek & Williams, 1984). Soldiers who are the sole survivors from their units after a combat incident are highly vulnerable to mental breakdown. Other soldiers feel guilt about having killed women, children, and civilians during combat. Even if such deaths were unavoidable, guilt seems to be a common factor among the PTSD patients from the Vietnam and Korean wars. Veterans often have ideas of omnipotence (belief that they are all-powerful and ultimately responsible for everything and everyone) (Glover, 1984), which cause them to feel responsible for the deaths of soldiers in their own ranks. They feel their decisions are extremely important, and directly influence the war outcomes. The guilt these veterans feel requires psychiatric treatment. Thus, feelings of personal responsibility, or guilt, plays an important role in the development of traumatic stress reactions.

Research supports the theory that guilt plays a role in PTSD. However, we do not understand the extent of that

role, nor do we know whether guilt is a component or a cause of the syndrome. We need further research and replication, while using in-depth statistical analysis and more appropriate research methodology. For instance, since most of the studies are done with only PTSD patients, we cannot be sure that guilt is a factor in PTSD. It is possible that all veterans feel guilt, and only some develop PTSD from other causes.

History of Impulsive Acts/ Poor Attitudes/ Arrests

Soldiers who experienced stress reactions had histories of impulsive acts and difficulty in adapting within society prior to their entry into the military (Bey & Zecchinelli, 1974; Bourne, 1970; Sudak, Martin, Corradi, & Gold, 1984; Yager, 1975; Helzer, 1984).

Researchers conclude that soldiers with histories of impulsive acts, poor attitudes and arrests among their family or themselves are more likely to suffer from the effects of combat stress, commit violent acts against incorrect targets (such as their own units members), and experience depression. Replication of the studies on larger samples ($n > 100$) might determine the extent of this effect and the reliability of prediction.

Meanings of Combat to the Individual

The development of stress reactions is integrally related to the individual's perception of the traumatic experience (Hendin, Pollinger, Singer, & Ulman, 1981; Hendin, Pollinger-Haas, Singer, Gold, & Trigos, 1983). An individual's response to a combat situation depends on its meaning to that individual. Those meanings, or philosophical judgments of the war (i.e. Is killing justified? Is it wrong to take a life in defense of a country? Is the war legitimate?) are reflected in individual adaptation within society before and after combat. We may be able to increase our understanding of PTSD by acknowledging and identifying these meanings, thus enabling the development of intervention strategies.

Self-Concept/ Self-Esteem/ Self-Confidence

Self-concept, esteem or confidence, are possible etiological factors in PTSD. Some authors found that a lack of self-esteem led to greater incidences of psychiatric illness (Bourne, 1972; Cohen & McKay, 1984; Hirsch, 1980; Sudak, Martin, Corradi, & Gold, 1984; Gal, 1986; Steiner & Neumann, 1978; Brende, 1983). Higher self-confidence was

related to better overall organizational climate and increased fighting ability. Lower self-esteem was related to lower satisfaction with socialization, depressed moods, and increased symptomatology. Soldiers with high levels of self-confidence were less likely to have clinical evidence of combat reaction than were those soldiers with less self-confidence. However, we do not know if the low self-confidence is a result or cause of PTSD. Future research should focus on the cause-effect aspect of the self-concept variable.

Sense of Helplessness

Researchers have found that a sense of helplessness will contribute to combat exhaustion and the symptoms of combat stress reactions (Shaw, 1983; Dewane, 1984). As soldiers are continually exposed to the battle situation, they have a diminishing chance of survival and an increased sense of helplessness. Other authors also mention a sense or state of helplessness as a common finding among PTSD sufferers (Brende, (1983); Jelinek, 1984). We do not know if sense of helplessness is a result or a cause of the stress reaction. Most of the research is retrospective, thus there is no way to determine if helplessness is cause or effect (Stewart and Weaver, 1987).

Physical Factors of the War

In addition to psychological factors, a second major set of elements influencing CSR and PTSD include physical factors such as: alcohol and drug abuse, boredom, exposure to combat, fatigue, training, treatment techniques, the war environment, diet, indirect fire, inability to return fire, isolation and loneliness, legitimacy of the war, the posture of the war, physiological states of the soldiers, and the one-year rotation schedule.

Alcohol/ Drug Use and Abuse

The use of alcohol and drugs was widespread in the Vietnam war and is associated, as a possible causal factor or as a symptom, with the onset of PTSD and CSR. Measures of PTSD were highly correlated with heavy alcohol and marijuana use (Bey & Zecchinelli, 1974; Branchey, Davis, & Lieber, 1984; Sierles, Chen, McFarland, & Taylor, 1984; Behr, 1984; Helzer, 1984; Laufer, Brett, & Gallops, 1985; Jelinek & Williams, 1984). Alcohol abuse and depression were the most common diagnoses among patients with PTSD. Thus, there is evidence for a link between PTSD and

substance abuse. However, we do not know if abuse is a causal factor in PTSD or a symptom of PTSD.

Boredom

Menninger (as mentioned in Bourne, 1970) proposed that boredom may be a factor in the onset of CSR. Lack of mental stimulation has been known to cause stress in some situations. Although there are few studies dealing specifically with boredom, research might use boredom as a variable for future analysis.

Combat Exposure/ Severity/ Intensity

Exposure to combat is one of the most widely researched variables in relation to combat stress and PTSD. Many authors found that participation in combat was related to the diagnosis of PTSD (Branchey, Davis, & Lieber, 1984; Hendin, Pollinger-Haas, Singer, Gold, Trigos, & Ulman, 1983; Hendin, Pollinger-Haas, Singer, Houghton, Schwartz, & Wallen, 1984; Keane, Scott, Chavoya, Lamparski, & Fairbank, 1985; Lund, Foy, Sipprelle, & Strachan, 1984; Bourne, 1970; Price, 1984; Shaw, 1983; Solomon, Mikulincer, & Hobfall, 1986; Yager, Laufer, & Gallops, 1984; Gal, 1986; Smith, 1982; Ingraham & Manning, 1981; Noy, Nardi, & Solomon, 1986; Levac, Greenfeld, & Baruch, 1979; Silverman, 1986). This relationship was a direct one: soldiers with more combat exposure were more likely to be diagnosed as having CSR or PTSD. Combat exposure (being in a combat unit) was directly related to increased post-war convictions and arrests, and increased emotional problems. Thus, these authors conclude that time or length of exposure to combat and its intensity are factors contributing to PTSD.

Contrary to these findings, other authors have provided evidence against the role of combat exposure as contributing to CSR and PTSD (Bourne & DuySan, 1967; Roman, 1986; Toubiana, Milgram, & Noy, 1986; Steiner & Neuman, 1978). These studies have shown that PTSD can occur with equal frequency in all groups regardless of the length of combat experience or combat intensity. Soldiers who experienced more hardships (under heavy fire, short in supplies, experiencing exhaustion) did not have higher rates of psychological breakdown than others with fewer hardships.

There is obvious controversy in regard to combat exposure since there is research both pro and con for its role in the onset of CSR or PTSD. There is a need for replication of studies, changes in methodology to promote

accuracy and universality, and better statistical evaluation (see Stewart & Weaver, 1987).

Exhaustion/ Fatigue

Menninger (as quoted in Bourne, 1970) proposed that exhaustion was a contributing factor to CSR. Soviet armed forces doctrine states that exhaustion contributes to stress (Donnelly, 1982). Hendin, Pollinger-Haas, Singer, Houghton, Schwartz and Wallen (1984) found that Vietnam veterans suffering from PTSD had experienced psychic trauma under conditions of terror and fatigue. Shaw (1983) also postulated that the length of rest periods and amount of physical exertion and sleep contributed to stress reactions during combat. While there is a wealth of research on sleep deprivation and fatigue, there are few studies that relate these variables to stress reactions. The military has official guidelines concerning work/sleep cycles during combat operations, which may decrease the effects of fatigue in future operations.

The general conclusion indicates that fatigue and exhaustion will contribute to stress reactions, but we do not know the extent of that contribution. Future research should concentrate on the incidence of fatigue and stress reactions to determine if there is a constant link between the two.

Familiarity with Mission and Terrain/ Training

Familiarity with the mission and terrain promoted a better unit climate, which, in turn, is a factor in the decrease of psychiatric casualties (Gal, 1986; Milgram and Hobfall, 1986; Bourne & DuySan, 1967; Donnelly, 1982). Training and leadership, combined with fighting on native soil or familiar terrain, led to lower rates of stress reactions among the Israelis in the Yom Kippur war (Milgram & Hobfall, 1986). Similarly, poor leadership and training may have contributed to the high rates of psychiatric breakdown in the US Army during WWII (Milgram & Hobfall, 1986). Concentration on training techniques, especially those on varying types of terrain, may help to increase soldier familiarity with maneuvers and decrease the rates of psychiatric breakdown.

Forward Treatment of CSR

Many authors advocate immediate front line (or forward) treatment of CSR in order to avoid chronic illness and PTSD (Levy & Neumann, 1984; Gal, 1986; Ingraham &

Manning, 1980; Toubiana, Milgram, & Noy, 1986; Price, 1984). According to this viewpoint, the goals of treatment are to return the soldier to active duty and, at the very least, keep him/her in optimal physical and mental health. Longer therapy in rest houses had the effect of promoting slow and minimal recoveries with chronic symptomatic recurrence.

While the literature promotes quick and temporary treatment principles in an attempt to eliminate chronic and long-term illness, we can not be sure that these principles do decrease psychiatric casualty rates. Longitudinal comparative studies are necessary to determine the effects of forward treatment.

Hostile and Deprived Environment/ Jungle/ Weather

Jungle warfare placed extreme physical demands on the soldiers in Vietnam, which may have led to the onset of stress reactions (Bey & Zecchinelli, 1974; Bourne, 1970; Shaw, 1983; Thienes-Hontos, Watson, & Kucala, 1982; Brende, 1983; Tiffany, 1967; Shatan, 1982). The unpredictability of danger in guerrilla warfare is a related factor that may lead to the onset of CSR. Although these articles mention the jungle environment and extreme climates as possible factors, there is little comparative empirical evidence available from which to draw more definitive conclusions about the influence of these conditions on PTSD and CSR.

Inadequate Diet

Lack of food and supplies and malnutrition are also proposed as factors in the onset of stress reactions in combat. Menninger (as stated in Bourne, 1970) stated that soldiers suffered from inadequate diets in Vietnam, which may have caused more physical stress. Inadequacy of supplies and scant food quantities may cause an increase in physical exhaustion and the symptoms associated with combat stress reactions (Shaw, 1983). Diet is obviously related to other variables such as physiological discomfort, fatigue, morale and stress. Future research should concentrate on the effects of diet on other variables leading to PTSD and CSR.

Indirect Fire

In his study of the British in the Falklands War, Price (1984) found that indirect fire was more stressful to the soldiers than direct fire. He also found that neuropsychiatric casualty rates increased in the presence

of indirect fire in American wars. Helzer (1984), on the other hand, found that personal injury or direct exposure to combat, rather than indirect fire, is most stressful. Thus, there is a controversy over the roles of direct and indirect fire in relation to stress. The controversy may be due to differing measures of stress or definitions. Clearly, the resolution of this controversy (through sound research with operational definitions) may shed some light on the effect of combat in general on stress reactions.

Inability to Return Fire

Bey and Zecchinelli (1974) reported that there were many instances in Vietnam in which soldiers were unable to return fire when fired upon. This situation created extreme stress. Bourne (1970) mentioned also that soldiers experienced artillery and other bombardment without methods of retaliation. Medical personnel were unable to carry weapons at some times, and were thus helpless against the enemy (Dewane, 1984). While it is likely that these situations caused high levels of stress, there is no empirical evidence linking that stress to the onset of subsequent stress reactions. The Bey and Zecchinelli study was based on psychiatric patients under care. Clearly, it would be beneficial to research the effects of an inability to return fire with a random sample of combatants, not just those undergoing treatment in a psychiatric facility. The lack of empirical proof should not be considered conclusive since so few studies are available on the subject.

Physical Isolation/ Loneliness/ Detachment in Combat

Many soldiers reported being physically isolated during their combat experience. Loneliness and abandonment were related to mental breakdown during battle (Dasberg, 1975; Bourne, 1970; Dewane, 1984). Mental breakdown during battle was more likely to occur when the soldier was in an isolated position and physically detached from the rest of the unit.

Isolation is also directly related to PTSD (Jelinek and Williams, 1984; Steiner and Neumann, 1978). Soldiers with lower rates of psychiatric breakdown had higher morale and trust and were most often fighting with friends within familiar units. Bey and Zecchinelli (1974) posed an alternative view of isolation. They said that the physical and social closeness demanded by certain war situations may provide few opportunities for the acquisition of distance from one's peers. While isolation is stressful, being too

closely confined with others in one's unit is also stress inducing.

The general consensus seems to be that isolation and abandonment produce combat stress reactions, yet there are few empirical studies to support this notion. We do not know if there is an optimal level of social detachment during war, or if all detachment has negative effects. Is isolation a cause of the PTSD or a result of it? We do not know.

Legitimacy of the War

Soldiers fighting in a war that was legitimate and morally correct in their eyes had lower rates of psychiatric breakdowns (Gal, 1986; Brende, 1983; Glover, 1984). These initial findings infer that the political nature of the war being fought, and society's commitment or lack of commitment to the war, seem to be important factors in the rates of psychiatric breakdown during combat. Again, a large body of empirical research in this area is lacking.

Offensive/ Defensive Posture of the War

Units in an offensive posture during combat were less likely to have high rates of psychiatric casualties than were units fighting defensively (Price, 1984; Noy, Nardi & Solomon, 1986; Levac, Greenfield, & Baruch, 1979). Defeat resulted in high psychiatric casualty rates. Few other studies deal with this aspect of combat and its relationship to stress.

Physical Discomfort/ Pain/ Physiological State

Discomfort and illness are possible contributing factors to the mental breakdown suffered by many during combat (Bourne, 1970; Donnelly, 1982; Shaw, 1983; Weil, 1984). Pain, surprise, fear and fatigue will produce stress, yet they are nearly unavoidable in combat situations. Physical discomfort is often the result of fatigue and exhaustion (cf., pp. 1-19 and 1-20). We do not know how extensive the influence of physical discomfort is on stress reactions. While we can recommend that discomfort be minimized, this is often impossible. Thus, the best way to reduce the stress caused by discomfort may be by training those in the military how to deal with their own discomfort and to aid their fellow unit members.

Rotation Schedule

The one-year rotation schedule is an individual

replacement procedure (as opposed to a whole unit replacement) which was developed after WWII, when Army leaders and research found that soldiers were experiencing battle stress due to the length of combat exposure. However, researchers generally agree that the rotation schedule disturbs the formation of small group cohesion. (Bourne, 1972; Steiner, 1978; Bourne, 1970). The gain in individual adaptation (both mental and physical) to a combat environment resulted in a loss of group cohesion. We do not know if cohesion or a soldier's ability to adapt is more important to the soldier's well-being.

Demographic Factors

A third major set of factors potentially influencing CSR and PTSD are demographic variables. The following demographic variables will be discussed in this section: age, cultural factors, education, intelligence, marital status, race, and rank.

Age of the Soldiers

The age of a soldier will determine, in part, his/her vulnerability to stress during combat (Bey & Zecchinelli, 1974; Bourne, 1970; Gal, 1986; Solomon, Noy, & Bar-On, 1986; Silverman, 1986; Levac, Greenfeld, & Baruch, 1979). Most soldiers are adolescents and young adults who are greatly affected by stress. Older soldiers, too, are more susceptible to breakdown during combat. While age is an important, the lack of empirically sound evidence prohibits us from reaching any definite conclusions about age of the soldier as a variable in producing PTSD.

Cultural Factors

Bourne and DuySan (1967) are two of very few authors who dealt with cultural factors in relation to combat stress. They studied a group of US soldiers and a group of soldiers from the Army of the Republic of Vietnam (ARVN). They found that the two groups had low rates of psychiatric casualties, but exhibited strikingly different behavior disorders. The US group had character behavior disorders and the ARVN had anxiety reactions. The authors concluded that the groups may have been equivalent in that both were using the most effective way to escape from an undesirable situation. They stated that the major differences between the groups were due to cultural aspects. Thus, we may want to study the relationship of culture to stress reactions. Cultural differences may help explain why some people break

down during combat while others do not.

Education Levels

Individuals with less than an eighth-grade education were at higher risk for combat exhaustion than individuals with higher education levels (Helzer, 1984; Shaw, 1983; Gal, 1986; Solomon, Noy, & Bar-On, 1986). Although these studies concluded that education has a role in the onset of stress reactions, we do not know why or how. We need research with empirical and statistical data to reach more sound conclusions.

Intelligence

Research most often links intelligence and education level. However, Gal (1986) stressed that intelligence, separate from educational level, played an important role in the onset of stress reactions. While there may be a relationship between intelligence and stress reactions, there is not enough research available to estimate the nature of that relationship.

Marital Status/ Family Environment

Ingraham and Manning (1980) found that married Israeli soldiers are more susceptible to the stress of combat than their unmarried counterparts. Births and deaths in the soldier's family will also increase their susceptibility to stress. It is possible that married US soldiers experience more stress, as is the case with Israeli soldiers, yet the studies reviewed do not examine this possibility.

Psychiatrists have studied family pathology as a predisposing factors in PTSD (Helzer, 1984; Davidson, Schwartz, Storck, Krishnan, & Hammett, 1985). There may be a genetic or biological factor involved in combat stress reactions and PTSD. Further research on the area of family pathology is needed.

Race

There is little research linking racial differences and stress. Yager, Laufer and Gallops (1984) found that participation in abusive violence or torturous acts had a greater emotional impact on blacks compared to whites. This finding suggests that there are racial differences in response to certain events. VanPutten and Yager (1984) also found that blacks experienced more symptoms of stress and psychological distress than whites when both groups had participated in combat. There are several reasons why this

may have been found. Assignment in military positions is not random, but based on ability and rank. Blacks often hold lower ranks and have less education than whites. Another possibility is that studies did not control for background. Therefore, the findings of racial differences may in fact be reflecting socioeconomic or educational differences, rather than racial differences.

Rank

A soldier's rank is a factor in susceptibility to combat stress (Gal, 1986; Solomon, Noy, & Bar-On, 1986; Levac, Greenfeld, & Baruch, 1979; Bourne, 1970). Rank, with education level and combat suitability, provides the basis for selection and expectation of military performance and factors into the susceptibility to stress. All of the above research studies have all been conducted on Israeli forces, thus making it difficult to generalize to the U.S. Army.

While factors during the war (both psychological and physical) are important to the study of PTSD and CSR, factors occurring post-war are also considered to have some influence on the onset of the stress reactions. These post-war factors, including the job market, family environments, political controversy, and reentry shock, are discussed below in the final section of this paper.

Post-war Adjustment Factors

There are several factors relating to PTSD which occur after the combat experience. These are mentioned briefly below since they are all extensions of categories discussed in previous sections. Veterans of Vietnam were met with a limited job market upon return to the United States (Thienes-Hontos, Watson, & Kuchala, 1982). Their family environments had changed drastically, since their wives and children had no contact with them for a long period of time (Nice, McDonald, & McMillan, 1981; McCubbin, Hunter & Dahl, 1975; Glover, 1984). The political controversy over the Vietnam war made the veterans feel unwelcomed when they returned. Society blamed the soldiers for an unpopular war (Bourne, 1972; Bourne, 1970; Thienes-Hontos, Watson & Kuchala, 1982; Brende, 1983). Finally, veterans experienced culture shock, or reentry shock, upon reentering the US. They were absent from an era characterized by overwhelming and drastic change (Bourne, 1972; Cavenar & Nash, 1976; Dasberg, 1975; McDaniel & McClelland, 1986; Kleiger, 1984). Kleiger (1984) found that men who had remained in the military after returning home

may have fared better in terms of psychological problems because they remained identified with the group that would provide support. However, the soldiers in any war have to adapt to a new lifestyle during military service, and they are forced to readjust to the host society when they return from war. These post-war factors, while not always present to the same extent, play important roles in the onset of stress-induced reactions. Reintegration into a changed society, especially an unwelcoming one, increases stress instead of alleviating it and may subsequently produce more psychiatric casualties.

Conclusion

Many of the variables and factors discussed in this paper are interrelated. Currently, it is nearly impossible to make any general overall conclusions about factors relating to PTSD and CSR based on this body of research. The major reason for this inability to generate conclusions is that, for the most part, the research is methodologically unsound (see Stewart & Weaver, 1987, for a complete review of the methodology). There are a few instances in which there are conflicting findings; but, on the whole, there are just not enough empirical studies to provide conclusive answers. Therefore, we present this paper as a description of what has been found, whether it is supported or not, and directions for further research. Although the lack of sound research is disappointing, this does not mean that there are not many intriguing and perhaps important ideas presented in the literature. The problem does not lie in the concepts per se, but rather in the absence of design, hypothesis testing and confirming results in the research studies (see Stewart & Weaver, 1987).

We hope this paper will provide researchers with research ideas that will help to increase our understanding of PTSD and CSR. Such an understanding could assist policy planners and military strategists in developing methods for greater combat effectiveness and fewer incidences of post-war trauma.

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generation. Archives of General Psychiatry. 41, 327-333.

Appendix A.

Andrews, Tennant, Hewson, Valliant 1978	n=863	none	<ul style="list-style-type: none"> -relationship between adverse life events and symptoms -risk of psychological impairment varied with life event stress, coping style, and crisis support 	<ul style="list-style-type: none"> -civilian sample (Australian) -large sample size
Atkinson, Sparr 1985	-----	-----	<ul style="list-style-type: none"> -studies of stress-induced disorders are in ferment so there are discrepant findings -disruption of cognition by depression, affects and traumatic memories 	<ul style="list-style-type: none"> -response to criticisms by M.M.Barr -refutes toxic chemical theory
Barr 1985	-----	-----	<ul style="list-style-type: none"> -found a high prevalence of symptoms not included in DSM-III criteria -possible link to toxic chemical effects 	<ul style="list-style-type: none"> -critique of article by Atkinson and Sparr

<u>AUTHOR</u>	<u>SAMPLE</u>	<u>CONTROL</u>	<u>FINDINGS</u>	<u>COMMENTS</u>
Behar 1984	n=31	none	<ul style="list-style-type: none"> -85% of inpatients with PTSD also had other psychiatric disorders -alcoholics all had flashbacks -alcoholism, caffeineism, drug use, depression, sociopathy 	<ul style="list-style-type: none"> -small sample -sample population consists of patients only
Bey 1972	1CS	-----	<ul style="list-style-type: none"> -stress of impending separation from family -estrangement from being newcomer to a clique -rotation schedule rotates only one at a time 	<ul style="list-style-type: none"> -no subjects -uses only 1 case example

<u>AUTHOR</u>	<u>SAMPLE</u>	<u>CONTROL</u>	<u>FINDINGS</u>	<u>COMMENTS</u>
Bey, Zecchinelli 1974	n=43	none	<ul style="list-style-type: none"> -adolescents and young adults -state of hyper-alertness -hostile, deprived environment -helplessness when fired upon -history of impulsive act and poor attitudes -use of alcohol and drugs -separation from home and family -unable to meet demands -physical and social closeness -no available means of escape -readily available weapons, with pressure to act -violence held escape value 	<ul style="list-style-type: none"> -no controls -small sample -sample population consists of psychiatric patients only
Blanchard, Gerardi, Kolb, Barlow 1986	n=43	none	<ul style="list-style-type: none"> -used the ADIS to diagnose PTSD and found good reliability 	<ul style="list-style-type: none"> -diagnosis only -small sample

<u>AUTHOR</u>	<u>SAMPLE</u>	<u>CONTROL</u>	<u>FINDINGS</u>	<u>COMMENTS</u>
Bleich, Siegel, Garb, Lerer 1986	n=25	none	<ul style="list-style-type: none"> -PTSD symptoms involve re-experiencing the traumatic event, numbing of responsiveness -antidepressants had the best results -there was a positive interaction between drug treatment and psychotherapy 	<ul style="list-style-type: none"> -small sample -drug therapy with several drugs
Boman 1986	n=50, 25	none	<ul style="list-style-type: none"> -PTSD can occur in those without combat exposure and without overseas military service -conflicting reports say Vietnam veterans have high levels of psychiatric symptomatology -PTSD may not be linked specifically to combat exposure 	<ul style="list-style-type: none"> -no controls -comparing two unlike samples -Vietnam veterans vs. currently serving Australians

<u>AUTHOR</u>	<u>SAMPLE</u>	<u>CONTROL</u>	<u>FINDINGS</u>	<u>COMMENTS</u>
Bourne 1970	-----	-----	<ul style="list-style-type: none"> -review of factors influential in PTSD -exposure to combat -isolation, boredom, inadequate diet, physical discomfort, exhaustion, illness -time in service -preexisting personality -morale, cohesiveness, esprit -no means of retaliation -jungle warfare -political controversy -rotation schedule creates staggered arrivals and departures 	<ul style="list-style-type: none"> -review article -large list of possible factors

AUTHOR	SAMPLE	CONTROL	FINDINGS	COMMENTS
Bourne 1972	n=?	none	<ul style="list-style-type: none"> -the one year rotation creates better adaptation but breakdown of the small unit -reentry shock during the reception back home -war was uniquely unpopular -self-concept plays an important role in adaptation 	<ul style="list-style-type: none"> -no reported sample size -no controls
Bourne, Coli, Datel 1968	n=10	-----	<ul style="list-style-type: none"> -while under the stress of being attacked, more hostility was present than anxiety or depression -this hostility was directed at higher headquarters, indigent Vietnamese and fellow team members, not at the enemy 	<ul style="list-style-type: none"> -ten special forces soldiers in South Vietnam -gave them the Weekly Multiple Affect Adjective Check list for four weeks -small sample -no controls

AUTHOR	SAMPLE	CONTROL	FINDINGS	COMMENTS
Bourne, DuySan 1967	n=757, 324	none	<ul style="list-style-type: none"> -one-year rotation may not be a factor because the Arvn also had cases without the rotation -nature of the war itself may be the most important factor in stress -major cultural differences between the two groups -both groups had low NP casualties -combat stress may be a negligible consequence in terms of morbidity in Vietnam -casualties came from both support and combat units 	<ul style="list-style-type: none"> -large sample sizes -comparing two culturally differing groups with possible different diagnostic criterion -sample population consists of psychiatric patients only
Branchey, Davis, Lieber 1984	n=52	n=51	<ul style="list-style-type: none"> -incidence of heavy drinking is related to severity of combat and length of combat exposure 	<ul style="list-style-type: none"> -correlational -has controls

AUTHOR	SAMPLE	CONTROL	FINDINGS	COMMENTS
Brende 1983	-----	-----	<ul style="list-style-type: none"> -there are pronounced identity changes in Vietnam veterans -4 types of stressors -guerilla warfare, political nature of the war, helplessness and defeat, guilt, grief, loss of comrades 	<ul style="list-style-type: none"> -describes pathology -case examples -descriptive article only
Cavenar, Nash 1976	6CS	-----	<ul style="list-style-type: none"> -anyone can develop PTSD -pre-existing personality traits are not causal 	<ul style="list-style-type: none"> -no sample -small number of case studies
Chaney, Williams Cohn, Vincent 1984	n=78	none	<ul style="list-style-type: none"> -MMPI profiles of PTSD patients resemble those of organic disease cause by pathology more than those of psychogenic disorders -MMPI can be used to differentiate between PTSD and other disorders 	<ul style="list-style-type: none"> -all subjects had had injury -no controls -small groups for comparison

AUTHOR	SAMPLE	CONTROL	FINDINGS	COMMENTS
Cohen, Hoberman 1983	n=70	none	<ul style="list-style-type: none"> -life stress scores were predictive of depression and symptomatology -social support helps protect from pathogenic effects of high stress but may increase symptoms in low stress situations -buffering hypothesis and direct effect hypothesis are supported under different conditions 	<ul style="list-style-type: none"> -uses college students for sample -no controls
Cohen, McKay 1984	-----	-----	<ul style="list-style-type: none"> -3 support mechanisms (tangible, appraisal, emotional) -need for positive feedback was the only independent predictor of life stress scores 	<ul style="list-style-type: none"> -mainly a review and discussion
Cohen, Wills 1985	-----	-----	<ul style="list-style-type: none"> -there is evidence for both the buffering hypothesis and the overall beneficial effect; these depend on what is being assessed 	<ul style="list-style-type: none"> -review of literature

AUTHOR	SAMPLE	CONTROL	FINDINGS	COMMENTS
Dasberg 1975	N=?(I)	none	<ul style="list-style-type: none"> -loneliness, guilt, abandonment, grief, isolation are factors leading to mental breakdown during war -need immediate treatment -early childhood experiences and disturbed relationships with key figures -isolating positions in the military -must develop the sense of belonging to the group -loneliness leads to anxiety 	<ul style="list-style-type: none"> -describes the factors necessary to promote group belonging -Israeli army only
Davidson, Schwartz Storck, Krishnan, Hammett 1985	n=36	yes	<ul style="list-style-type: none"> -alcohol abuse and depression were the most common diagnoses -PTSD is a form of pathological anxiety -66% had history of familial psycho-pathology -there was an increase in the prevalence of alcoholic siblings -all patients had had at least one significant psychiatric illness during their lifetime 	<ul style="list-style-type: none"> -not a random sample -used both inpatients and outpatients -controls are unmatched

AUTHOR	SAMPLE	CONTROL	FINDINGS	COMMENTS
Dewane 1984	n=?	none	<ul style="list-style-type: none"> -based on ten years experience with Vietnam veterans -inherent contradiction for medical personnel -helplessness -survivor guilt -preoccupation with death -anger, isolation and estrangement -may be a premorbid personality factor -grief work is effective with them in treatment 	<ul style="list-style-type: none"> -no controls -mostly medical personnel -mostly speculative and treatment oriented
Donnelly 1982	-----	-----	<ul style="list-style-type: none"> -the Soviet system has a high degree of integration among its elements -surprise, fear, fatigue, and pain are the main components of stress -aim to produce stress in the enemy by using surprise, concentration of effort, speed, and continued pressure on the defender -stress rehearsed, repetitive drills since the first casualty of stress is reasoned thinking 	<ul style="list-style-type: none"> -review of the Soviet attitude on stress

AUTHOR	SAMPLE	CONTROL	FINDINGS	COMMENTS
Ellis 1984	-----	-----	<ul style="list-style-type: none"> -the origins of war neuroses throughout history -war neurosis was regarded as cowardice -malingering -irritable heart -found in all wars but were labeled differently 	<ul style="list-style-type: none"> -historical background
Figley 1978	n=101	none	<ul style="list-style-type: none"> -combatants had lower personal adjustment than did noncombatants after their military entry -stresses interpersonal adjustment 	<ul style="list-style-type: none"> -no control -Vietnam veterans now in college -combatants versus non-combatants
Gal 1983	n=283	yes	<ul style="list-style-type: none"> -the dominant motivating factors for acts of courage are found in the social structure of the primary group -morale, cohesiveness, mutual responsibility -it may be cognitive or situational -heroes had higher general quality, motivation scores, and intellectual ability 	<ul style="list-style-type: none"> -cases of unusual heroism -does use controls

AUTHOR	SAMPLE	CONTROL	FINDINGS	COMMENTS
Gal 1986	-----	-----	<p>-intensity of fighting, combat role of the soldier, and rank are the battlefield and combat factors</p> <p>-individual factors included personal background</p> <p>-group factors are cohesion and identification with the unit</p> <p>-personality is only weakly associated with breakdown in combat but may be related to the prognosis once breakdown has occurred</p> <p>-age, education, motivation, intelligence, rank, reserve vs. other, all have a role</p> <p>-Israelis do not have long wars so they avoid combat exhaustion</p>	<p>-summary chapter on findings from the Yom Kippur War</p>

AUTHOR	SAMPLE	CONTROL	FINDINGS	COMMENTS
Gal 1986	n=?	none	<ul style="list-style-type: none"> -uses factor analysis and intercorrelations to find 8 factors leading to stress -confidence in commanders -confidence in self, team, and weapons -unit cohesion and morale -familiarity with mission and terrain -confidence in immediate commanders -enemy evaluation -legitimacy of the war -worries and concerns -morale played big role in onset and extent of psychiatric reactions during combat -morale and cohesion merged to form one factor -morale is not predicted, but is instead one of factors that combines to comprise the overall climate 	<ul style="list-style-type: none"> -not just correlational -done with Israeli defense forces

<u>AUTHOR</u>	<u>SAMPLE</u>	<u>CONTROL</u>	<u>FINDINGS</u>	<u>COMMENTS</u>
Glover 1984	n=?	none	<ul style="list-style-type: none"> -symptoms include ideas of omnipotence, biases as to the importance of their decisions -could not mourn due to the situation -not necessarily the premorbid personality that is related to stress 	<ul style="list-style-type: none"> -uses Vietnam veterans -no controls -no reported subjects
Glover 1984	2CS	none	<ul style="list-style-type: none"> -3 factors found in the mistrust in Vietnam veterans -the war experience -society's negative response -psychosocial development -those most affected were often conscientious and patriotic 	<ul style="list-style-type: none"> -case studies only -no controls

AUTHOR	SAMPLE	CONTROL	FINDINGS	COMMENTS
Helzer 1984	n=943	yes	<ul style="list-style-type: none"> -event focused studies do not account for the tendency to consult for illness -most studies are retrospective -by studying extreme events we can avoid these problems -difficult to distinguish antecedents from consequences when the events are under the individual's control -lack of specificity in definitions -there is a synergistic effect rather than an attenuation of pre-disposition in extreme situations 	<ul style="list-style-type: none"> -could have found the amount of influence of combat but did not -definition of severe stress differs from others -uses a drug positive sample with a general sample (495 vs. 470) -matched controls -large sample
Hendin 1984	n>100 (1CS)	none	<ul style="list-style-type: none"> -PTSD patients tend to identify with other veterans -they treat the outside world as the enemy -they become alive in a climate of combat -anger helps them overcome fear and deny guilt 	<ul style="list-style-type: none"> -has only one representative case study -no data or statistics -no controls

AUTHOR	SAMPLE	CONTROL	FINDINGS	COMMENTS
Hendin 1983	3CS	none	-uses psychotherapy to analyze dreams and events in the treatment of PTSD	-only three case studies
Hendin, Haas, Singer, Gold, Trigos, 1983	n=100	none	-Preexisting personality gives meaning to the combat experience -stresses character, and precombat personality -survival guilt	-large sample size
Hendin, Haas, Singer, Gold, Trigos, Ulman 1983	n=? 1CS	none	-discusses symptoms, pre- and post-combat life, nature and extent of combat	-no reported sample size -one case study is representative
Hendin, Pollinger- Haas, Singer, Houghton, Schwartz Wallen 1984	n>100 3CS	none	-predominant theme on the Rorschach test is combat, which is much more than for those who have PTSD without reliving experiences -psychic trauma under conditions of terror and fatigue -fatigue due to insomnia, drug and alcohol abuse, can trigger these reliving experiences -precombat variables do not distinguish those with reliving experiences from those without	-only 3 case studies reported -no controls

<u>AUTHOR</u>	<u>SAMPLE</u>	<u>CONTROL</u>	<u>FINDINGS</u>	<u>COMMENTS</u>
Hendin, Pollinger, Singer, Ulman 1981	n=40 4CS	none	<ul style="list-style-type: none"> -stress reactions are related to individual perception of traumatic experience -meanings of combat are reflected in pre- and post-combat adjustment 	<ul style="list-style-type: none"> -small sample -only four case studies
Hobfall 1985	-----	-----	<ul style="list-style-type: none"> -the use of correlational data had led to an overly simple model -correlations may be misinterpreted as having no relationship if subgroups are not considered -social support may not always be beneficial -effects may be limited by situational or personality factors -longitudinal studies are needed to better understand the buffering of direct effect question 	<ul style="list-style-type: none"> -a review article on research problems

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Hocking 1970	n=303	none	<ul style="list-style-type: none"> -incarceration in ghettos or concentration camps -hiding for a period of time -no one is immune, the predisposition is not the sole predicting factor 	<ul style="list-style-type: none"> -large sample size -sample consists of WWII veterans
Ingraham, Manning 1981	-----	-----	<ul style="list-style-type: none"> -morale and esprit are important factors in stress reactions -length of exposure and intensity of combat -lack of confidence in the Army social structure -commitment to the Army requires vertical communication 	-review article
Ingraham, Manning 1980	-----	-----	<ul style="list-style-type: none"> -intensity and duration of combat, lethality of modern weapons, raw fear -anyone can break down if given enough stress -overwhelming importance of interpersonal relationships 	-review article

<u>AUTHOR</u>	<u>SAMPLE</u>	<u>CONTROL</u>	<u>FINDINGS</u>	<u>COMMENTS</u>
Jelinek, Williams 1984	n>2000	-----	-depression, helplessness rage, anxiety, isolation survivor guilt, alcohol consumption are all symptoms of PTSD	-based on the experiences of the authors and patients -large sample but all were from a patient population
Keane, Scott, Chavoya, Lamparski, Fairbank 1985	n=45	yes	-Vietnam veterans with PTSD had significant reductions in social network size and quality of social support -led to social alienation, depression, guilt, and traumatic anxiety -PTSD veterans had more combat exposure	-controlled for combat and demographic variables -small sample size to do comparisons

AUTHOR	SAMPLE	CONTROL	FINDINGS	COMMENTS
Kleiger 1984	3CS	none	<ul style="list-style-type: none"> -all 3 subjects had impressive military records -there is little published about the prevalence of PTSD in the military community (most studies are on veterans) -active duty veterans may have coped better collectively because they remained connected to the military, this could reduce dissonance and provide support 	<ul style="list-style-type: none"> -the three case studies are representative -one of few studies that deals with currently serving PTSD sufferers
Kolb 1983	1CS	none	<ul style="list-style-type: none"> -stress reaction is related to the severity and duration of the existential threat and its meaning to the self -preexisting childhood neuroses may create a predisposition for neuroses in reaction to less intensive events and a lesser capacity for adaptation -survival guilt is also a factor in stress reaction 	<ul style="list-style-type: none"> -a keynote address -only one case study

AUTHOR	SAMPLE	CONTROL	FINDINGS	COMMENTS
Laufer, Brett, Gallops 1985	n=251	none	<ul style="list-style-type: none"> -the DSM-III criteria may hinder the identification of different varieties of PTSD and thus underestimate its prevalence -PTSD measures were highly correlated with demoralization, guilt, alcohol and marijuan use -controlled for these variable in a regression equation to determine the effects 	<ul style="list-style-type: none"> -controlled for social background, service characteristics, and psychopathology after service -used correlations but also did regression -sample had 183 whites and 68 blacks
Levac, Greenfeld, Baruch 1979	n=?	-----	<ul style="list-style-type: none"> -Military assignment, fighting, logistics, rank, intensity of fire, age of the soldier, all lead to stress -vulnerability -those adapting through activity have a decreased psychiatric risk -there is a critical period up to one week of treatment that will determine the outcome of treatment 	<ul style="list-style-type: none"> -investigated combat reaction in Israeli troops in the Yom Kippur war of 1973 -no reported sample size for security reasons-- Israeli, regard this as top secret information

AUTHOR	SAMPLE	CONTROL	FINDINGS	COMMENTS
Levy, Neumann 1984	n=?	-----	<ul style="list-style-type: none"> -introduced several lines of treatment to adhere to the principles of proximity, immediacy and expectancy in the treatment of combat reactions -goals of treatment were to return the individual to his military role in the original unit, to keep within the army, and to at the very least return them to optimal health and functioning -faster and more substantial recovery occurred 	<ul style="list-style-type: none"> -no reported sample size for security reasons --Israeli's regard this as top secret -installation occurred in the 1982 war
Lund, Foy, Sippelle, Strachan 1984	n=43	-----	<ul style="list-style-type: none"> -measure trauma in the Vietnam war -combat activity, involvement in atrocities, and being stationed in a combat zone -relates combat exposure, and adjustment before and during the military to PTSD and the severity of symptoms -stress may build cumulatively through exposure to trauma 	<ul style="list-style-type: none"> -no controls -small sample -all PTSD patients

AUTHOR	SAMPLE	CONTROL	FINDINGS	COMMENTS
McCubbin, Hunter, Dahl 1975	n=215 families	-----	-major adjustments occurred in family roles and interaction when husbands or fathers were POWs	-army, navy and marine corps families one year after reunion
McDaniel, McClelland 1986	-----	-----	-deals with the treatment of PTSD -the stressful event is usually beyond human experience -the routine of life is not reestablished despite the termination of the stressful event	-no subjects -therapy oriented
Mester, Hazan 1984	n=?	-----	-soldiers' parents who participated in therapy when soldier was admitted to a psychiatric hospital spoke of death often -may be a way of expressing aggressive impulses due to the frustration of hopes	-Israeli families -no reported sample size

AUTHOR	SAMPLE	CONTROL	FINDINGS	COMMENTS
Milgram, Hobfall 1986	-----	-----	<p>-training, esprit de corps, leadership, and fighting on native soil were all factors in the Yom Kippur war--despite the surprise of the war, the soldiers kept fighting</p> <p>-in WWII, US platoons broke down due to poor leadership, poor morale, chronic organization problems and high psychiatric casualty rates</p>	-deals with both Israeli and US troops
Nice, McDonald, McMillian 1981	n=138	n=138	<p>-marital stability and perceptions of marital adjustment, divorce rate</p> <p>-length of marriage, wife's retrospective view of marriage quality, wife's emotional adjustment will predict family reintegration</p>	<p>-large sample size</p> <p>-has control group</p> <p>-deals only with POWs</p>

AUTHOR	SAMPLE	CONTROL	FINDINGS	COMMENTS
Noy, Nardi, Solomon 1986	n=?	none	<ul style="list-style-type: none"> -the magnitude of the combat stress is the major etiologic factor in psychiatric casualties -group cohesiveness and leadership are buffers -the conduct and outcome of the battle are important--defeat will lead to an increase in psychiatric casualties -intensity and duration of battle -they say we should be able to predict the potential susceptibility of a battalion from the unit characteristics, cohesiveness and leadership and the anticipated battle conditions 	<ul style="list-style-type: none"> -no sample size for security reasons--Israeli's regard this as top secret information -used 4 battalions

AUTHOR	SAMPLE	CONTROL	FINDINGS	COMMENTS
Price 1984	-----	-----	<p>-the Falklands produced a low rate of psychiatric casualties</p> <p>-American rates of psychiatric casualties were thought to be decreased by having psychiatric personnel present in the front lines and by screening all evacuees but these were not available in the Falklands and yet the rates of psychiatric casualties were lower</p> <p>-5 optimal factors are discussed: elite units, combat duration, indirect fire, unopposed landing, and offensive or defensive posture</p> <p>-these 5 factors combined in optimal fashion in the Falklands to produce a low rate of psychiatric breakdowns</p>	<p>-summary of the war</p> <p>-no specific subjects</p> <p>-uses percentages</p> <p>-compares the British with the Americans</p>

AUTHOR	SAMPLE	CONTROL	FINDINGS	COMMENTS
Rosenthal 1975	n=151	-----	<ul style="list-style-type: none"> -soldiers in Vietnam had to fight in an indecisive war -soldiers were dependent on authority but the authority figures were unable to assert their power -no significant difference on anomy between Vietnam soldiers and the non-veteran sample 	<ul style="list-style-type: none"> -Vietnam war soldiers and non-veterans -the scale used does not assess long term effects
Saigh 1984	n=20,35 Lebanese	-----	<ul style="list-style-type: none"> -anxiety levels reported by soldiers still in Beirut corresponded to those reported by the evacuated soldiers -arousal levels decreased markedly at the post-assessment -suggests that prolonged exposure to stressful events that are then alleviated may not be associated with high stress levels in the long term 	<ul style="list-style-type: none"> -exclusively based on self report -many factors may have been involved with the validity -there is no data on physiology or overt behavior -Lebanese graduates just before the invasion of Lebanon by Israel in 1982 -group of 20 remained in Beirut while the group of 35 were evacuated

<u>AUTHOR</u>	<u>SAMPLE</u>	<u>CONTROL</u>	<u>FINDINGS</u>	<u>COMMENTS</u>
Shatan 1982	2CS	-----	<p>-threat of death at human hands</p> <p>-reentry problems because they have adopted a new lifestyle</p> <p>-extreme climates, loss of unit or town, reflex startle reaction, guilt, grief, violence, security, secretiveness, intimacy, work, guarded attitude toward emotion and separation are factors leading to PTSD</p> <p>-in the presence of severe stress, preexisting personality in irrelevant, the stress itself is the crucial predisposition</p>	<p>-only two case studies</p> <p>-an address at a Conference on Traumatic Stress Disorders in Vietnam Veterans at Dartmouth College Medical School and Albert Einstein Medical College Department of Psychiatry</p>

AUTHOR	SAMPLE	CONTROL	FINDINGS	COMMENTS
Shaw 1983	1CS	-----	<p>-intensity of combat, length of rest periods, tactical situation, communication, weather, terrain, cohesiveness, physical exertion, sleep, food supply, other supplies and battle stress are factors leading to the onset of combat exhaustion</p> <p>-there is a diminishing chance of survival with the length of combat exposure</p> <p>-morale, cohesion and leadership, along with individual factors such as age, ability and education are also factors</p>	<p>-no specified sample size</p> <p>-gives a review of the many factors thought to be influential in the onset of combat exhaustion</p>
Sierles, Chen, McFarland, Taylor 1984	-----	-----	<p>-flashbacks are found in both alcoholics and non-alcoholics so alcohol is not the cause of flashbacks</p> <p>-in this study he did not test for caffeine</p> <p>-since Behar and Bernstein both found confirming evidence of concurrent diagnoses with PTSD, they conclude that the high prevalence of this is real, and not just an artifact of the sampling technique</p>	<p>-response to Behar's confirmation and questions on alcohol, flashbacks and caffeineism</p> <p>-based on studies with psychiatric patients and small sample sizes</p>

AUTHOR	SAMPLE	CONTROL	FINDINGS	COMMENTS
Silverman 1986	-----	-----	<ul style="list-style-type: none"> -one's preexisting emotional disorder will influence one's reaction to stress and the long range outcome -age is a factor -there is limited evidence available to clarify the role between personality and psychiatric illness -many previously healthy individuals experience PTSD -the best evidence suggests that trauma can create PTSD in almost anyone -the nature and degree of trauma are better predictors of PTSD than preexisting personality 	<ul style="list-style-type: none"> -review article -discussion of preexisting personality debate
Smith 1985	-----	-----	<ul style="list-style-type: none"> -many who suffer from PTSD are "compulsively good" people -they are stubborn, selfish, demanding, dependent, aggressive and have a persistent need to be right -the success of treatment depends on the time of intervention, empathy, judicious use of medication, and view toward legal counsel 	<ul style="list-style-type: none"> -description and treatment -no reported subjects

AUTHOR	SAMPLE	CONTROL	FINDINGS	COMMENTS
Smith 1982	-----	-----	-survivor guilt and the level of exposure and intensity of combat are factors found to be influential in PTSD	-summary article with case studies used as examples
Solomon, Mikulincer, Hobfall 1986	n=382	n=334	-Military company support, perception of battle intensity, and feelings of loneliness are important to breakdown during combat -social support does not buffer the effects of stress but does affect it directly -officer is a predictor of loneliness -battle intensity is a predictor of combat stress reaction -loneliness is the best single indicator of CSR	-has a control group -tested various predictors -done on soldiers from the Israeli-Lebanon war in 1982

AUTHOR	SAMPLE	CONTROL	FINDINGS	COMMENTS
Solomon, Noy, Ear-On 1986	-----	-----	<p>-age level and type of service are factors in breakdown</p> <p>-reservists will experience breakdown more often because they are older, have been in previous wars which may weaken their resilience, have a more drastic transition from peace time to war, have less cohesive units and more responsibility to wives and children</p> <p>-education level, combat suitability and rank can provide the basis for selection and expectation</p>	<p>-did not have the whole chapter so the sample information may be incomplete</p>
Solomon, Oppenheimer, Noy 1986	n=?	-----	<p>-there are two opinions on stress: stress evaporation versus cumulative residual stress</p> <p>-many patients had early difficulties in interpersonal relations or a pathological nuclear family</p> <p>-school problems, problems with married and family life, and disciplinary problems in the military</p>	<p>-study of Lebanon war veterans without PTSD and a group in CFRU</p> <p>-a nine-year follow-up study</p>

AUTHOR	SAMPLE	CONTROL	FINDINGS	COMMENTS
Steiner, Neumann 1978	n=74	n=100	<ul style="list-style-type: none"> -soldiers in the control group experienced more hardships than the others which led these authors to conclude that combat exposure does not influence stress reactions -psychological factors are much more important (loneliness, trust of immediate command, low performance esteem, low unit morale, not serving with original unit and moving or changing teams repeatedly) -the control group had better trust in their commanders, self-confidence, high morale, and were fighting in their original units with most of the same people from previous wars 	<ul style="list-style-type: none"> -large sample size with control group -compares two very different types of groups with known differences in their reaction to stress and other incongruities
Stratton, Parker, Shibbe 1984	n=60	-----	<ul style="list-style-type: none"> -found that the traumatic event is not soon forgotten -this raises the question about longitudinal studies -follow-up research is needed to test specific reactions to traumatic incidents 	<ul style="list-style-type: none"> -sample of deputy sheriffs in Los Angeles area -no control group

<u>AUTHOR</u>	<u>SAMPLE</u>	<u>CONTROL</u>	<u>FINDINGS</u>	<u>COMMENTS</u>
Sudak, Martin, Corradi, Gold 1984	n=10	-----	<p>-pre-military personality factors included significant maternal deprivation of loss, parental neglect or abuse, low self-esteem, poor impulse control, and a history of delinquent behavior</p> <p>-PTSD could be due to a failure to cope with revived conflicts</p> <p>-premorbid sequence: severely disturbed childhood, ego impairment, adult character structures that utilize relatively immature defenses</p>	<p>-sample of only ten, all of whom were inpatients in Cleveland between 1979 and 1981</p> <p>-uses case reports</p> <p>-no controls</p>
Thienes-Hontos, Watson, Kucala 1982	n=29, 29	-----	<p>-factors found to be influential include the unpredictability of danger in guerilla warfare, the skepticism of the value of the war effort, having to kill women and children and civilians, the rotation of soldiers singly, return to the US suddenly with a limited job market and feelings of being scapegoated</p> <p>-stress reaction are not peculiar to or more common among Vietnam veterans</p>	<p>-compares a group of combat veterans from Vietnam with a group of combat veterans from the Korean war</p> <p>-all subjects had psychiatric problems</p>

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Tiffany 1967	-----	-----	<p>-the rate of neuro-psychiatric illness in Vietnam is lower than in any other conflicts</p> <p>-factors contributing to this are the rotation policy, less combat exhaustion than in WWII, better morale due to excellent training in Vietnam troops, better medical services and proper ps:chiatric policies and sufficient mental hygiene personnel</p> <p>-in treatment, stress early treatment in the forwardmost areas, and an expectation of returning to duty</p>	<p>-narrative only -written before we really knew the extent of neuropsychiatric casualties from Vietnam</p>
Toubiana, Milgram, Noy 1986	n=15	yes	<p>-all patients in a forward army field hospital were treated and referred back to their units within 36-72 hours</p> <p>-there was only a slightly higher incidence of disability with consequent inability to serve as a result of combat exposure as compared with those with no combat exposure</p>	<p>-has a control group -small sample -illustrative case studies</p>

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VanPutten, Yager 1984	-----	-----	<p>-more than 500,000 Vietnam veterans are in need of emotional help</p> <p>-high rates of alcoholism, drug abuse, violence, divorce and emotional instability are thought to be the result of combat exposure and atrocities</p> <p>-we need to know how much is attributable to combat, antecedent personality, and subsequent psychosocial stressors, supports and attitudes</p> <p>-black veterans experienced more stress and symptoms and psychological distress than black veterans who did not participate and whites who did participate</p> <p>-vietnam veterans do not experience substantial emotional stress on the average, especially when controlling for social background</p>	<p>-summary article</p> <p>-discussion of Yager's article</p> <p>-says Yager's article assumes that assignment to combat is random but it is not</p>

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Weil 1985	-----	-----	<ul style="list-style-type: none"> -external aggression, emotional trauma, basic personality, physiological state and the preceding moral situation are factors in PTSD -facing the threat to physical existence, presence of moral conflict -treatment guidelines are immediacy, proximity, centrality of the units and simplicity of the methods 	<ul style="list-style-type: none"> -gives the clinical traits and descriptions -no subjects
Yager, Laufer, Gallops 1984	n=1342	yes	<ul style="list-style-type: none"> -Vietnam veterans who did not have combat exposure had fewer problems than other veterans who had not been in Vietnam -arrest and convictions increased as combat exposure increased -participation in abusive violence had an emotional impact on blacks that it did not have on whites 	<ul style="list-style-type: none"> -subjects consisted of 629 nonveterans and 713 veterans, 350 of which were Vietnam veterans -all Americans -large sample size

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Yager 1975	n=31	none	<ul style="list-style-type: none"> -focuses on the least anonymous form of violence, close range combat -interviewed veterans for family background, violence in childhood, arrests, schooling, status and military history -precombat variables as a group can help to distinguish between violence and non-violence groups, but they cannot predict -esprit, nature of the combat unit, soldiers' histories may be factors 'but we still do not have the understanding to be able to predict or prevent 	<ul style="list-style-type: none"> -no controls -done with Vietnam veterans with incidence of personal violence during combat -assumes random combat assignment